

IPIECA Workshop

“Natural Gas as Climate Change Solution: Breaking down the barriers to methane’s expanding role”



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Global Gas Flaring Reduction (GGFR) Partnership



Background of Global Flaring



- Global flaring level around 150 bcm/year or > 400 mt of CO₂
- 75% of global flaring and venting and occurs in fewer than 10 countries
- Major flaring areas are: Russia, Gulf of Guinea and the Middle East
- Global level has stayed constant for the last 20 years

Why Associated Gas is being Flared

- There is a considerable number of barriers to using associated gas, many of which are beyond the control of oil companies
- Host countries lack capacity and/or commitment to create the enabling environment
- Lack of collaboration and cooperation between governments and oil companies with regard to flaring reduction

Collaborative Action: GGFR

- **August 2002** : GGFR Partnership was formed at the World Summit on Sustainable Development in Johannesburg
- **GGFR Objective** : to support governments and the petroleum industry in their efforts to reduce flaring and venting through:
 - Facilitating constructive communication among stakeholders
 - Sharing best practices
 - Building capacity
 - Commissioning gas utilization and gas sector studies
 - Helping countries in securing assistance of WB/IFC and other IFIs and donors

GGFR Strengths

- Effective set up for
 - promoting collaboration and cooperation
 - between oil companies and governments
 - between oil companies
 - sharing best international practices
 - tracking global flaring levels
- Voluntary nature of the partnership
- Focused sectorial approach
- GGFR core team is a neutral facilitator leveraging WB/IFC resources

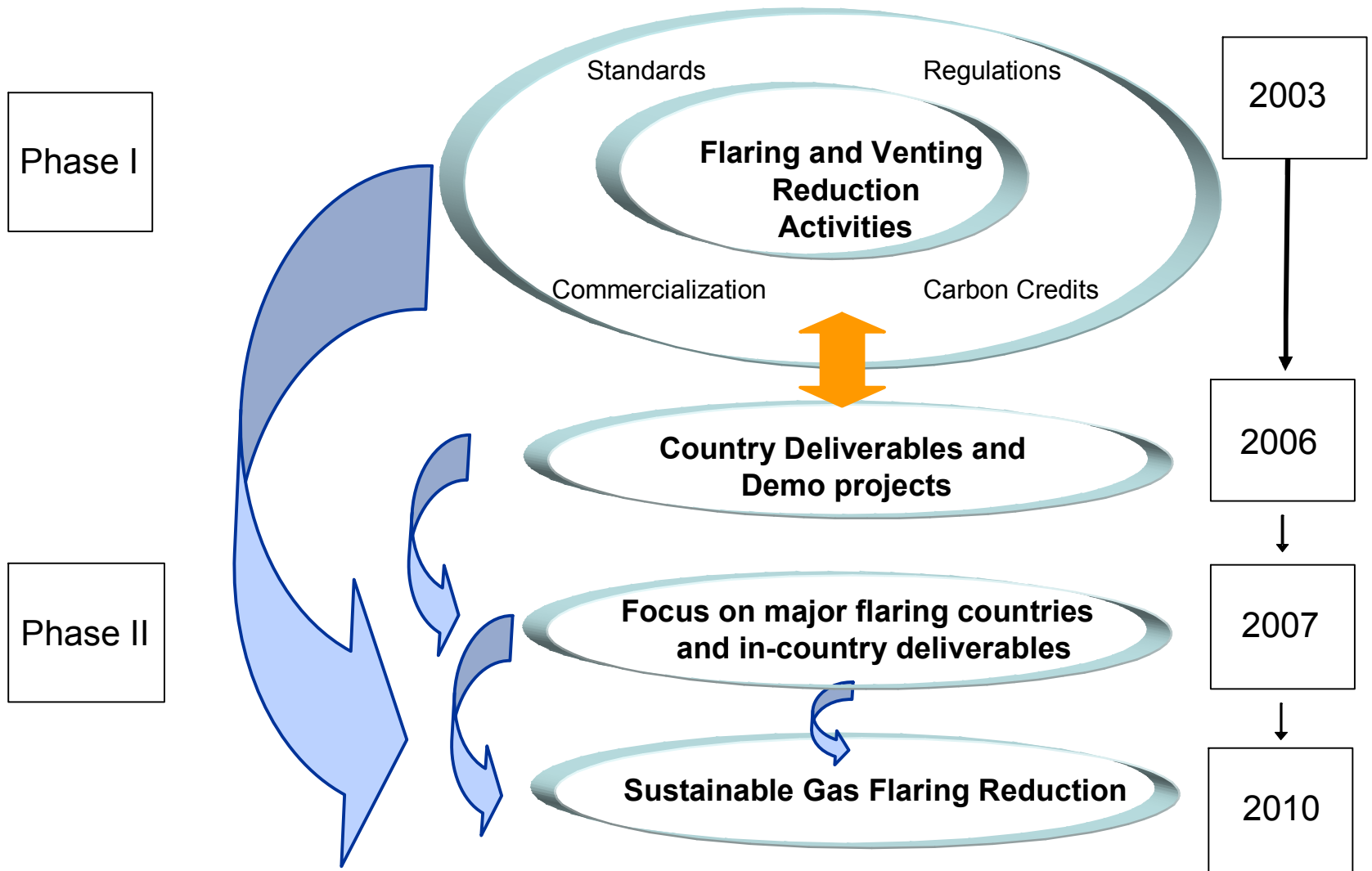
GGFR Challenges

- A number of major flaring countries are not members of GGFR
- Voluntary nature of the partnership
- Ability of the partnership to promote necessary reforms in the oil, gas, and power sectors
- Multiple stakeholders
- Long timeframe to achieving tangible results

Flaring Reduction Calls for Reforms in the Energy Sector

Oil & Gas Upstream	Gas Sector	Power Sector
<ul style="list-style-type: none">- Ownership of associated gas- Regulation of flaring and emissions- Fiscal regime- Gas terms in oil development agreements	<ul style="list-style-type: none">- Domestic market for gas and gas products- Domestic gas/fuel prices- Third party access to transmission- Investments/Funding	<ul style="list-style-type: none">- Domestic electricity prices- Third party access to transmission- Investments/Funding

GGFR's Key Areas of Action



Phase I Achievements

- Significant representation of world gas flaring in the Partnership
- Global deliverables
 - Global standard for flaring and venting
 - Regulatory best practices
 - Gas flaring data tool
 - Carbon credit financing
- In-country public-private partnerships
 - 17 demonstration projects

Current GGFR Public and Private Partners

Countries/NOCs

Algeria (Sonatrach)
Angola
Cameroon (SNH)
Chad
Ecuador
Equatorial Guinea
Indonesia
Khanty Mansiysk (Russia)
Nigeria
Kazakhstan
Qatar(2007)

Donors

Canada
Norway
UK (Foreign Commonwealth Office)
USA
EU(2007)

IOCs

BP
Chevron
ENI
ExxonMobil
Norsk Hydro
Shell
Statoil
Total
Marathon Oil

Multilaterals

The World Bank
OPEC

Stakeholder Engagement Process (“Standard”)

- To provide framework for governments, companies, and other key stakeholders to consult each other and take collaborative/complementary actions
- Expand project boundaries and reduce barriers to associated gas utilization
- To encourage integrated approach including market and infrastructure development, commercialization, legal and fiscal regulations, carbon credits

Phase I: Demonstration Projects Update (Commercial)

Approach

1) Feasibility studies →

1) Project identification workshops →

2) Stakeholder facilitation →

Projects

Ohanet-Algeria / LPG-Indonesia

Río del Rey-Cameroon / Sedigi-Chad

Gulf of Guinea / Zafiro-EG / Ofon-Nigeria

Phase I: Demonstration Projects Update (Carbon Credit)

<i><u>Methodology</u></i>		<i><u>Projects</u></i>
1) Gas to power	➡	Russian JI (Russia) Afam (Nigeria)
2) Gas to pipeline	➡	TFT (Algeria)
3) Gas to reinjection	➡	OB/OB (Nigeria)
4) Gas to LNG	➡	LNG (Angola)
5) Gas to LPG	➡	LPG (Indonesia)

Phase II strategy (2007-2009)

- Identify and prioritize high-impact countries
- Concentrate on in-country projects
- Assist partner countries in development of national flaring reduction plans
- Accelerate sustainability strategies in existing partner countries and global deliverables / activities (hand-off, mainstream, exit)
- Measure tangible results (KPIs)
- Publicize successes

Phase II Country Selection

“Long-list” of potential client countries for extension period:

The Gulf of Guinea : Cameroon, Equatorial Guinea,
Nigeria

CIS : Russia, Kazakhstan, Azerbaijan

Middle East : Libya, Qatar, UAE, Saudi Arabia,
Iraq

Latin America : Brazil, Mexico, Venezuela

Asia : Indonesia

Phase II

Country Selection

Country	Partner Companies								
	BP	Chevron	Eni	Exxon	Hydro	Marathon	Shell	Statoil	TOTAL
Nigeria		X	X					X	
Kazakhstan		X						(X)	
Eq. Guinea									
Cameroon									
Qatar									X
Russia	(X)		X						
Azerbaijan	X							X	
Iraq									
UEA									X
Saudi Arabia									
Libya			X						X
Brazil									
Venezuela								X	
Mexico									
Indonesia	X		X						
Angola	X	X			X			X	

Phase II

Country Selection

Activities	Effort		
	CT	C	OC
Assessment Phase (New Countries)			
Assess, understand and document the context in the country: <ul style="list-style-type: none"> • What are the key drivers / needs relevant to flaring? • What are the key barriers to gas utilization? • What are the key political drivers? • What are the key drivers in the energy sector? 	L		L
Decide Go / No Go for country	L		L
Develop tailored GGFR offerings for country.	L		S
Identify best contact / entry point in the country who could support GGFR activities and establish contact	L		L

CT = Core Team; C = Country Partner; OC = Company Partner

L=Lead; S=Support

Phase II

Country Selection

Activities	Effort		
	CT	C	OC
Planning Phase			
Convene preliminary meeting(s) with country contact to review assessment, introduce targeted GGFR offerings, and secure membership. (For existing partner country, secure formal commitment to membership for extended period).	L	S	S
Identify champion(s) in the country who could own / drive the work program in the country.	L	S	L
Engage country to define tailored, country-specific strategy and work program, including specific project champions. Get buy-in of all key players – agree on ownership, roles, etc. (Note: Utilize Stakeholder Engagement Process (“Standard”) where appropriate)	L	S	L
Develop country-specific communication / roll-out strategy.	L	S	S
Develop country-specific plan to evaluate GGFR program effectiveness	L	S	S
Develop country-specific sustainability strategy (handoff, mainstream, exit,)	L	S	S

Phase II

Country Selection

Note: Data shown is purely for illustration

High Impact Country Assessment Table

Country		General	Regulatory Factors	Economic & Commercial Factors	Political Factors	Proposed Action
Better Known Countries						
Nigeria	25					
Kazakhstan	2.7					
Equatorial Guinea	3.6					
Cameroon	1.7					
Indonesia	3.5					
Some Information						
Russia	14.7					
Limited Information						
Azerbaijan	2.5		?			
Iraq	8.6			?		
Qatar	4.5+					
Brazil	1.5		?	?		?
Mexico	1.6				?	
Venezuela	5.4					
Libya	2.5	?	?			

Nomenclature

Unfavorable
Neutral
Favorable

Green = factors supportive of GGFR initiatives (opportunities)

Red = factors that represent barriers to GGFR initiatives (impediments)

Yellow = Unable to form view

Some current GGFR activities...

The GGFR Data Tool

There is great uncertainty in reported flaring and venting data

- Partners decided to develop a web based data tool/data base to :
 - gather consistent data
 - better understand flared and vented gas volumes per country
 - Public reporting of data
 - track flaring reduction versus forecasts
- Data tool roll out in 2006/2007

Some current GGFR activities...

Satellite imagery

With the US National Oceanic and Atmospheric Administration (NOAA), a quantitative study is currently being carried out :

- ✓ GGFR partners are providing historical flare volume and location data
- ✓ NOAA is using these data to calibrate flare satellite image brightness

Some current GGFR activities...

Global flaring reduction forum

Global Forum 12 -15th Dec 2006 in Paris

Objectives:

- Raise awareness about flaring
- Share of best practices, success stories
- Raise awareness of opportunities & technologies to reduce flaring
- www.flaringreductionforum.org

Thank you for your attention!

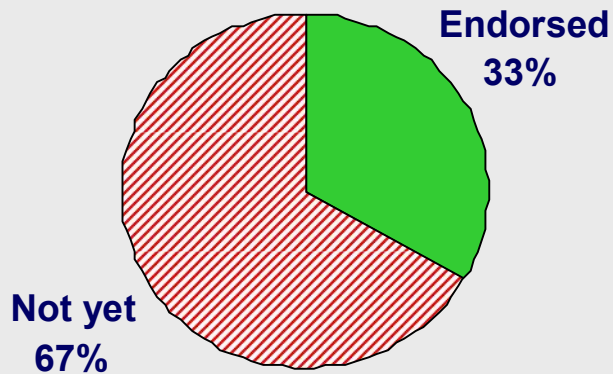
<http://www.worldbank.org/ggfr>



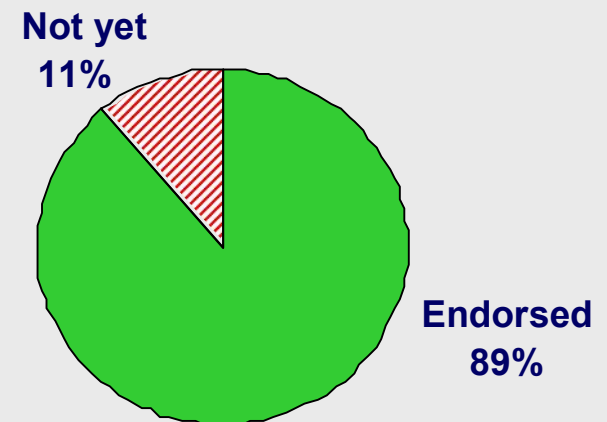
- Back up slides

Endorsement of the Stakeholder Engagement Process ("Standard")

Partner country endorsement



Partner company endorsement



Demonstration projects

Partner Countries	Projects	Carbon credit possibility	Gas flare reduction
Algeria	Ohanet		
	TFT (oil)	✓	4.5 bcm
	In Amenas		
Nigeria	Gas pipeline South-North		
	Gas to Power, AFAM	✓	~ 4.6 bcm
	Ob re-injection project	✓	~ 3.49 bcm
	Ofon Phase II		~ 6 bcm
Angola	Angola LNG	✓	7 bcm / y
Cameroon	P/L Rio del Rey to Limbe		3 bcm
Eq. Guinea	Zafiro pipeline to ELNG		13 bcm
Chad	Small scale: Sidigi field		2.3 bcm
Ecuador	Small scale power : Yuca /Yulebra fields		0.2 bcm
Gulf of Guinea	Regional Gas Transport system		4-5 bcm / y
Indonesia	Kaji-Semoga AG Recovery & Utilization	✓	1.8 bcm
	Project still under selection process		
Russia (Khanty	Surgutneftegas	✓ (JI)	4 bcm
Mansiysk region)	Danilovsk I	✓ (JI)	1.5 bcm

Demonstration projects

Projects

- 1) Algeria- TFT
- 2) Angola- LNG
- 3) Indonesia- Kaji-Semoga
- 4) Nigeria- AFAM
- 5) Nigeria- Ob/Ob
- 6) Russia - Surgutneftegas
- 7) Russia- Danilovsk I

Project Type/Vol.

Gas to markets

4.5 bcm

Gas to LNG

7 bcm/y

Gas to LPG

1.8 bcm

Gas to power

4.6 bcm

Gas to reinjection

3.49 bcm

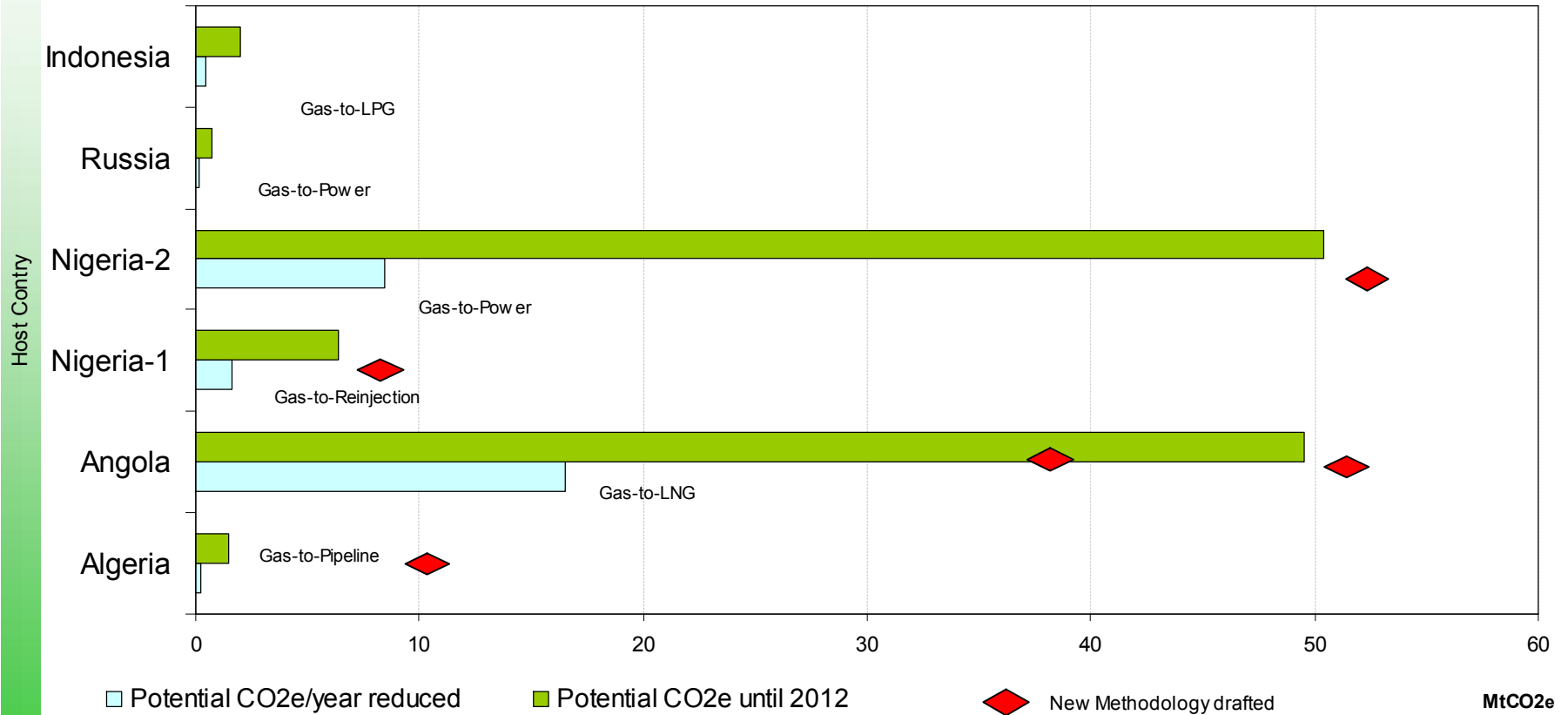
Gas to power

4 bcm

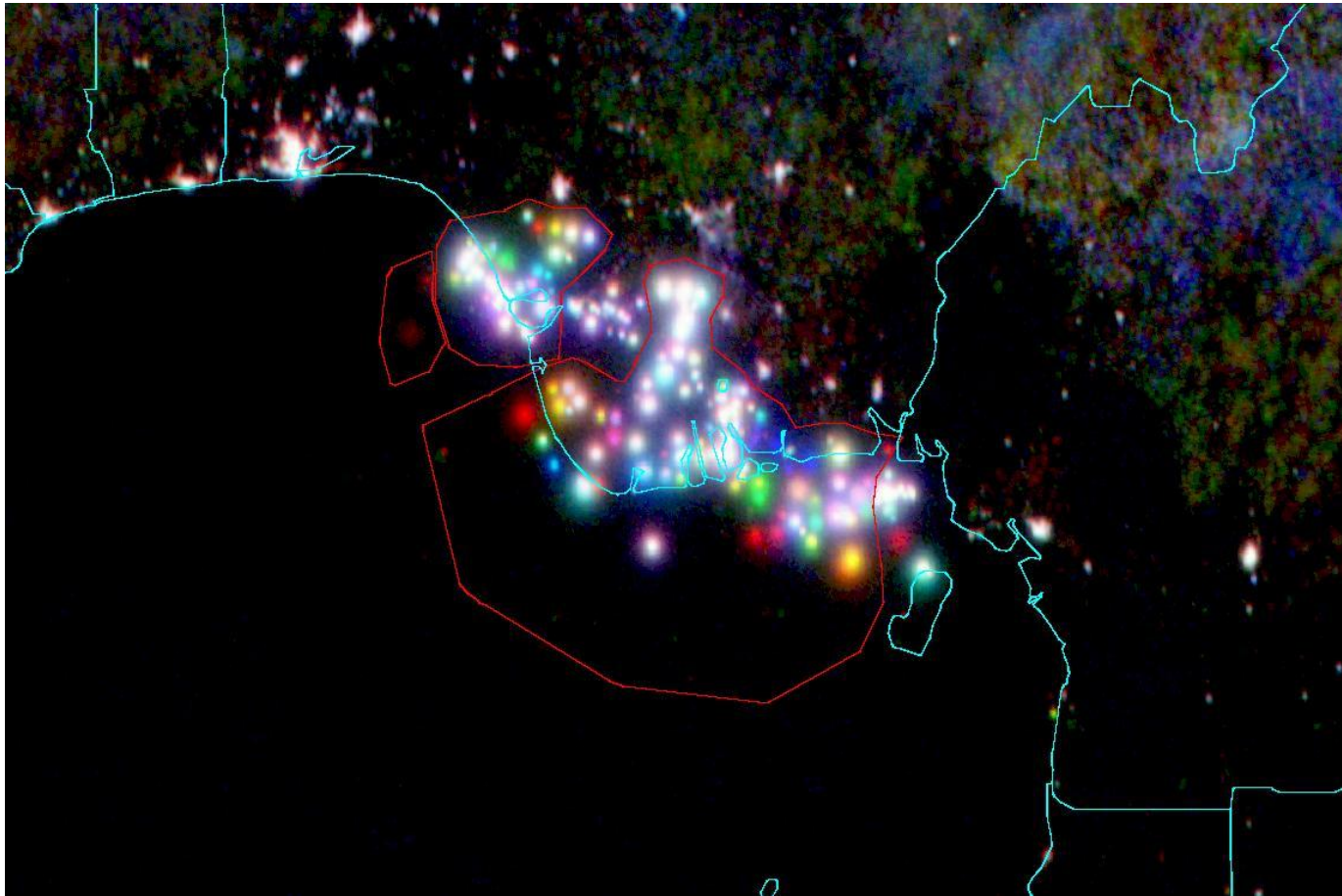
Gas to power

1.5 bcm

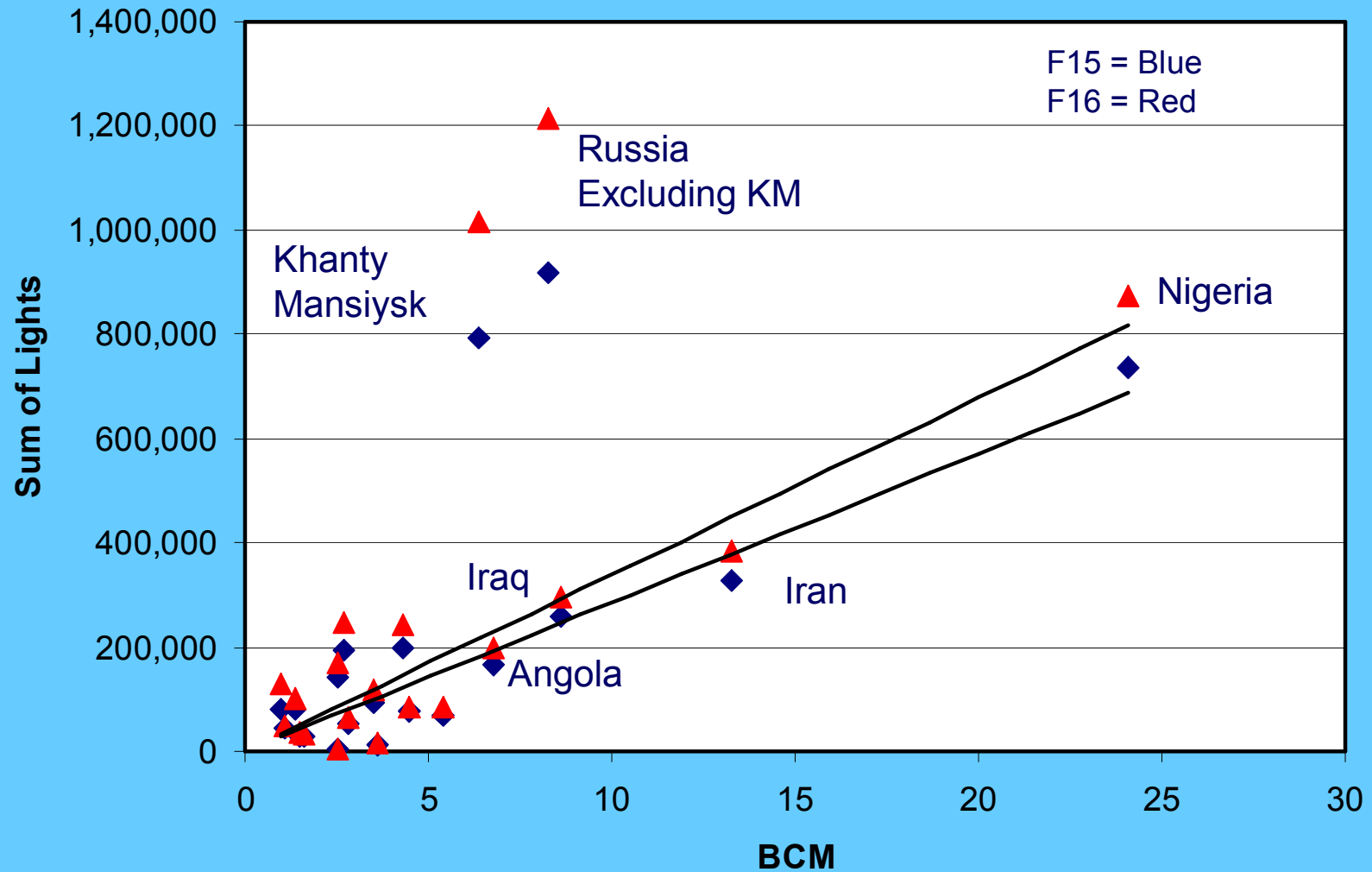
Carbon Credit Demonstration Projects



Nigeria from satellite



GGFR Reported Gas Flaring in Billion Cubic Meters



Top 20 Gas flaring countries

2004 Rank	Country	Reported Flaring 2004* <i>Source: GGFR</i>
1	Nigeria	24.1
2	Russia (total)	14.7
	<i>Khanty Mansiysk (KM)</i>	6.4
	<i>Russia (excluding KM)</i>	8.3
3	Iran	13.3
4	Iraq	8.6
5	Angola	6.8
6	Qatar	4.5
7	Algeria	4.3
8	Venezuela	3.7*
9	Equatorial Guinea	3.6
10	Indonesia	3.5*
11	USA	2.8
12	Kazakhstan	2.7
13	Libya	2.5
14	Azerbaijan	2.5
15	Mexico	1.6
16	UK	1.6
17	Brazil	1.5*
18	Gabon	1.4
19	Cameroon	1.1
20	Canada	1.0
	Total Top 20	107.5